FROEHLING & ROBERTSON, INC.
Engineering Stability Since 1881

310 Hubert Street
Raleigh, North Carolina 27603-2302
T 919.828.3441 I F 919.828.5751
NC License #F-0266

November 27, 2017 (revised February 5, 2018)

North Carolina Department of Transportation
Geotechnical Engineering Unit
1020 Birch Ridge Drive
Raleigh, North Carolina 27610

Attn.: Mr. Gordon Box, L.G.
GeoEnvironmental Project Manager

Re: State Project: R-2530B
WBS Element: 34446.1.6
NC 24-27 from Bird Road in Albemarle to West of the Pee Dee River

Subject: **Preliminary Site Assessment**
Parcel #214 – Linda Goodman (Remax Properties)
8006 NC Hwy 73 West
Mount Gilead, North Carolina
F&R Project #66V-0092

Dear Mr. Box:

Froehling and Robertson, Inc. (F&R) has completed the authorized Preliminary Site Assessment at the Linda Goodman property located in Mount Gilead, Montgomery County, North Carolina. The work was performed in general accordance with F&R's Proposal No. 1866-00132, dated June 14, 2017 (and revised June 22, 2017). Notice to Proceed was issued to F&R on July 6, 2017. This report documents our field activities, presents the results of laboratory analysis and provides estimated quantities of petroleum impacted soils.

Please do not hesitate to contact us if you should have any questions regarding this report.

Sincerely,

FROEHLING & ROBERTSON, INC.

NORTH CAROLINA PROFESSIONAL SEAL 038743 ENGINEER BENJAMIN A. WHITLEY

DocuSigned by: Benjamin A. Whitley E425D6E8C23545B...

DocuSigned by: 4DB7F275EBFD410...

Clint E. Sorrell
Environmental Scientist

Benjamin A. Whitley, P.E.
GeoEnvironmental Services Manager

FROEHLING & ROBERTSON, INC.

PRELIMINARY SITE ASSESSMENT

Linda Goodman (Parcel #214)
Remax Properties
8006 NC Hwy 73 West
Mount Gilead, North Carolina
State Project: R-2530B
WBS Element: 34446.1.6
F&R Project #66V-0092

November 27, 2017 (revised February 5, 2018)

Prepared for:

North Carolina Department of Transportation
Geotechnical Engineering Unit
1020 Birch Ridge Drive
Raleigh, NC 27610

TABLE OF CONTENTS

PAGE

1.0 INTRODUCTION 1

2.0 GEOPHYSICAL SURVEY.....1

3.0 SITE ASSESSMENT ACTIVITIES 2

4.0 SUBSURFACE CONDITIONS 3

5.0 ANALYTICAL RESULTS 3

6.0 CONCLUSIONS AND RECOMMENDATIONS.....4

7.0 LIMITATIONS 5

APPENDIX I FIGURE No. 1 – Topographic Map
FIGURE No. 2 – Site Vicinity Map
FIGURE No. 3 – Laboratory Results & Boring Location Plan

APPENDIX II GEOPHYSICAL REPORT PREPARED BY PYRAMID

APPENDIX III SITE PHOTOS

APPENDIX IV GEOPROBE LOGS

APPENDIX V LABORATORY ANALYTICAL RESULTS

Preliminary Site Assessment Report
Linda Goodman Property (Parcel #214)
Mount Gilead, Montgomery County, North Carolina
F&R Project No. 66V-0092

1.0 Introduction

Froehling and Robertson, Inc. (F&R) has prepared this Preliminary Site Assessment (PSA) Report to document soil assessment activities performed at the Linda Goodman Property addressed as 8006 Highway 73 West, in Mount Gilead, Montgomery County, North Carolina. The site is located on the eastern side of Highway 73, at the intersection with Windmere Point as shown in Appendix I, Figures 1 and 2. According to the NCDEQ UST Section Registry no Facility ID has been assigned to the site. The Request for Technical and Cost Proposal (RFTCP) indicates the site formerly operated as a gas station. During the field investigation it was determined that the site currently operates as a real estate office (REMAX).

According to the NCDOT within their RFTCP, acquisition of right-of-way is necessary for the proposed NC 24-27 design. As such, the NCDOT requested a PSA be performed to assess the possibility of encountering petroleum impacted soil from known or unknown USTs, and to locate USTs which may exist within proposed easements and right-of-way at the project site.

The PSA was performed in general accordance with F&R's Proposal No. 1866-00132, dated June 14, 2017 (and revised June 22, 2017) with Notice to Proceed issued to F&R by the NCDOT on July 6, 2017. The purpose of this report is to document field activities, present the results of laboratory analysis, and provide estimated quantities of petroleum impacted soils.

The existing on-site structure is one-story in height and is presumably of brick and concrete masonry unit (CMU) block construction. The remainder of the site consists of an asphalt paved parking lot and cleared/wooded land. The site is bordered to the north by an asphalt paved parking lot; to the south by Highway 73; to the east by Swift Island Lake Tillery Boat Access; and to the west by Highway 73. Access to the site is gained from Highway 73 to the west.

2.0 Geophysical Survey

Prior to F&R's soil assessment activities, Pyramid Environmental & Engineering, P.C. (Pyramid) conducted a geophysical survey to locate suspect metal underground storage tanks (USTs). The geophysical work was conducted from July 23 to 25, 2017 and was performed within proposed easements and right-of-way of Highway 73.

The geophysical investigation consisted of electromagnetic (EM) induction surveys using a Geonics EM61 instrument. The EM61 data was collected along parallel survey lines spaced approximately 5 feet apart. Ground-penetrating radar (GPR) investigations of selected EM61 anomalies were investigated using a Geophysical Survey Systems UtilityScan DF unit equipped with a dual frequency 300/800 MHz antenna. The data was reviewed in the field to evaluate the possible presence of USTs and later transferred to a desktop computer for further review. Isolated EM anomalies were identified on the site, including a building, possible debris/metal, and a vent pipe/gutter.

Based on the EM and GPR geophysical data collected at the site, Pyramid did not observe anomalies that were interpreted to be the results of metallic USTs within about 8 feet of the ground surface. The complete geophysical report is attached as Appendix II.

3.0 Site Assessment Activities

F&R visited the site on August 30, 2017 to perform the Preliminary Site Assessment. The assessment consisted of advancing 4 borings into the soils at the project site using direct-push technology (GeoProbe). The boring locations were determined by F&R staff based on the results of the geophysical survey, site features and proposed construction activities. Two of the borings (B-1 and B-2) were advanced northwest of the on-site building, adjacent to Highway 73. Borings B-3 and B-4 were advanced west of the on-site building, also adjacent to Highway 73. F&R attempted to advance the borings to the proposed depth of 10 feet below grade surface (bgs). However, Borings B-1 through B-3 were terminated at depths ranging from 6 to 9.5 feet bgs, where GeoProbe refusal was encountered. Photos detailing existing site features are attached as Appendix III and boring locations are depicted in Figure 3 of this report.

Soil sample cores from the borings were collected in disposable, 4-foot long acetate sleeves. The soil samples were visually/manually classified and screened in the field using a calibrated photo-ionization detector (PID) for evidence of petroleum hydrocarbons. Evaluation of VOC concentrations were performed using a calibrated MiniRae 3000 PID which produces results in parts per million (ppm). A representative soil sample was collected from two foot sections of each sleeve and placed in a re-sealable plastic bag. The vapors were then allowed to equilibrate in the headspace of the bag for approximately ten minutes prior to measurement with the PID. The measurements were collected by placing the probe tip into the headspace of the bag. PID measurements can be found in the GeoProbe Logs in Appendix IV, as well as in Table 1 in Section 5.0 below.

Generally, the soil sample in each boring which exhibited the highest PID concentration was submitted for laboratory analysis for diesel range organics (DRO), gasoline range organics (GRO), Total BTEX (benzene, toluene, ethylbenzene and xylenes), 16 PAHs (polycyclic aromatic hydrocarbons) and BaP (Benzo(a)pyrene) by Ultraviolet Fluorescence (UVF) technology (RedLab QED Hydrocarbon Analyzer).

The samples were collected in laboratory-supplied sample containers, placed in a cooler with ice, and shipped via UPS to RedLab in Wilmington, North Carolina following standard chain-of custody procedures.

4.0 Subsurface Conditions

As indicated in the attached GeoProbe Logs (Appendix IV), subsurface conditions from existing ground surface to boring termination primarily included various layers of dry-moist, red-orange-brown silty sandy clay; moist, red-orange-brown, silty sandy clay with gravel; and dry, red silty fine-medium sand. F&R attempted to advance the borings to the proposed depth of 10 feet below grade surface (bgs). However, Borings B-1 through B-3 were terminated at depths ranging from 6 to 9.5 feet bgs, where GeoProbe refusal was encountered in interbedded layers of dense silty sand with gravel.

PID readings generally did not exceed 7.3 ppm, and petroleum odors and/or groundwater were not observed during field screening or sample collection activities.

5.0 Analytical Results

As shown in the following table, petroleum hydrocarbons identified as GRO were detected in the soil sample at boring location B-4, at a depth from 2 to 4 feet bgs. The laboratory results indicate that the GRO concentration at B-4 was 0.48 mg/kg, which is below the NCDEQ UST Section GRO Action Level of 50 mg/kg.

Petroleum hydrocarbons identified as DRO were detected in the soil samples at two boring locations advanced at the site (B-1 and B-4), at a depth from 2 to 4 feet bgs. The laboratory results indicate that the DRO concentrations ranged from 1.1 mg/kg (B-1) to 2.9 mg/kg (B-4), which are below the NCDEQ UST Section DRO Action Level of 100 mg/kg.

The laboratory analytical results indicate concentrations of the sum of 16 EPA PAHs above the method detection limit, but below the total NCDEQ Action Level of 9,068.816 mg/kg at Boring B-4. The soil analytical results are summarized in Table 1 below. The laboratory analytical results can also be found in the attached Appendix V of this report.

Table 1
Soil Sampling Analytical Results

Sample ID	Sample Date	Sample Depth (ft bgs)	PID Reading (ppm)	GRO (mg/kg)	DRO (mg/kg)	TPH (mg/kg)	Total BTEX (mg/kg)	Total Aromatics (mg/kg)	16 EPA PAHs (mg/kg)	BaP (mg/kg)
B-1	8/30/17	2-4	5.5	<0.3	1.1	1.1	<0.3	0.6	<0.09	<0.012
B-2		6-8	7.0	<0.28	<0.28	<0.28	<0.28	<0.06	<0.09	<0.011
B-3		2-4	5.0	<0.28	<0.28	<0.28	<0.28	<0.06	<0.09	<0.011
B-4		2-4	6.8	0.48	2.9	3.4	<0.28	1.4	0.15	<0.011
NCDEQ Action Level				**50**	**100**	**NSE**	**13.8**	**NSE**	**9,068.81**	**0.088**

Samples shown in bold exceed the NCDEQ Action Level as outlined in the NCDEQ, DWM, UST Section Guidelines
ppm = parts per million
GRO = Gasoline Range Organics
DRO = Diesel Range Organics
TPH = Total Petroleum Hydrocarbons
BTEX = Benzene, Toluene, Ethylbenzene and Xylenes
NSE = No Standard Exists

6.0 Conclusions and Recommendations

F&R conducted a PSA at the Linda Goodman Property addressed as 8006 Highway 73 West, in Mount Gilead, Montgomery County, North Carolina. A geophysical investigation was performed by Pyramid Environmental & Engineering to investigate the presence and location of USTs within proposed easements and right-of-way at the project site. Based on the results of the geophysical survey, it was determined that USTs were not present within the within the surveyed area.

Four GeoProbe borings were advanced during the assessment within proposed easements and right-of-way, where grading activities are proposed in association with the NC 24-27 improvements. Based on the results of laboratory testing and observed PID readings, petroleum impacted soils were found in the vicinity of boring locations B-1 and B-4. Laboratory analysis detected concentrations of DRO at these locations, and GRO at boring location B-4; however, the concentrations of these compounds were below the NCDEQ UST Section Action Level of 100 mg/kg DRO and 50 mg/kg GRO.

It should be noted that a delineation of the soil contamination was not performed, as this was not included in the proposed scope of work. The above conclusions are based on interpretations of soil analytical results, PID readings and our experience with petroleum UST releases.

7.0 Limitations

These services have been performed, under authorization of the North Carolina Department of Transportation for specific application on this project. These services have been performed in accordance with generally accepted environmental and hydrogeological practices. No other warranty, expressed or implied is made. As with any subsurface investigation, actual conditions exist only at the precise locations from which samples were taken. Certain inferences are based on the results of sampling and related testing to form a professional opinion of conditions in areas beyond those from which samples were taken. Our conclusions and recommendations are based upon information provided to us by others, our sampling and testing results and our site observations. We have not verified the completeness or accuracy of the information provided by others, unless otherwise noted. Our observations are based upon conditions readily visible at the site at the time of our site visits.

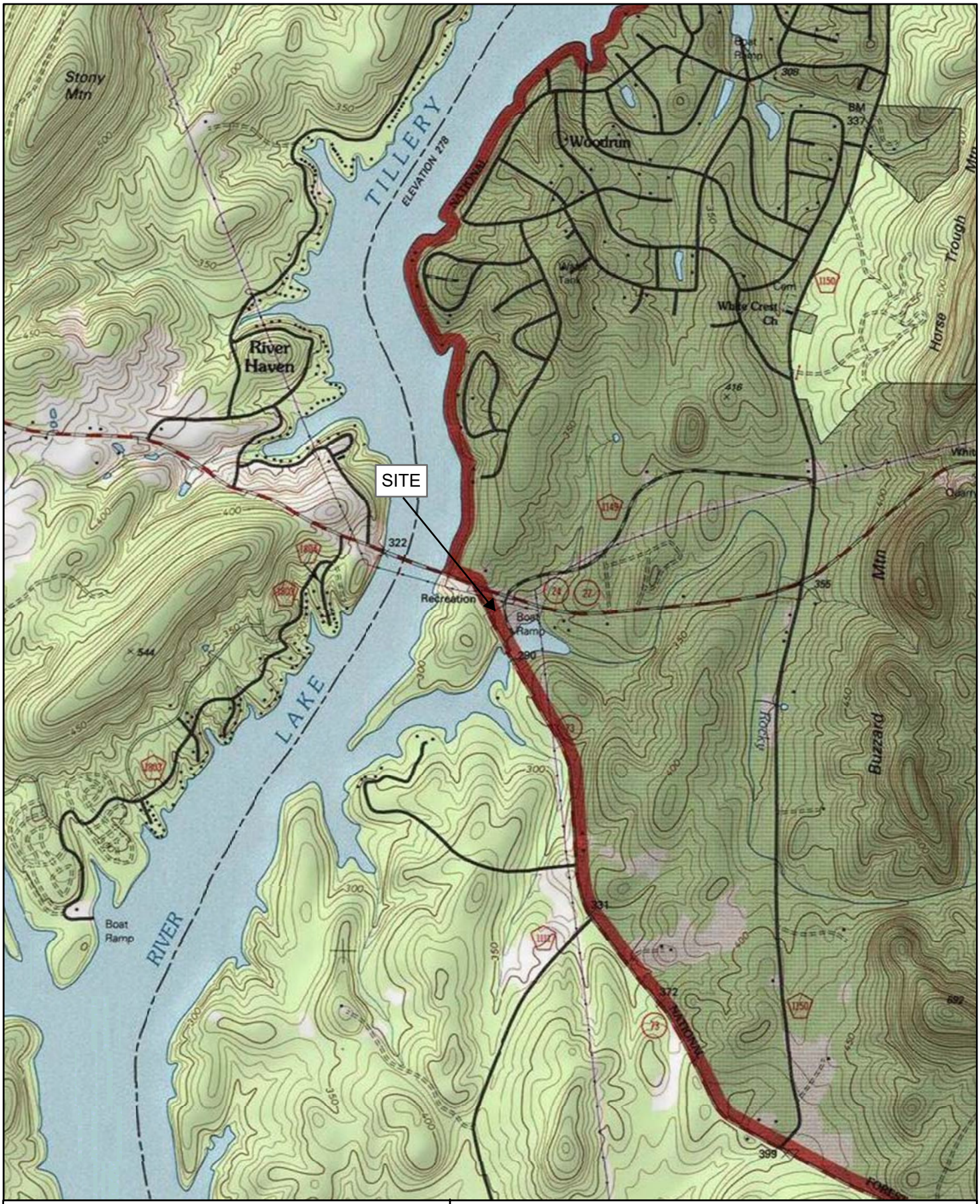
Froehling & Robertson, Inc. by virtue of providing the services described in this report, does not assume the responsibility of the person(s) in charge of the site, or otherwise undertake responsibility for reporting to any local, state or federal public agencies any conditions at the site that may present a potential danger to public health, safety or the environment. In areas that require notification of local, state, or federal public agencies as required by law, it is the Client's responsibility to so notify.

APPENDIX I

Figure No. 1 – TOPOGRAPHIC MAP

Figure No. 2 – SITE VICINITY MAP

Figure No. 3 – LABORATORY RESULTS & BORING LOCATION PLAN



SITE TOPOGRAPHIC MAP

FROEHLING & ROBERTSON, INC.
Engineering Stability Since 1881
310 Hubert Street
Raleigh, North Carolina 27603-2302 I USA
T 919.828.3441 I F 919.828.5751

Client:	NCDOT
Project:	R-2530B PSAs
Location:	Parcel #214, Albemarle
F&R Project No.:	66V-0092 — 8006 Hwy 73 West - Mt Gilead, North Carolina
Data:	USGS 2013
Date:	November 2017 (Revised Feb. 5, 2018) — Scale: 1:24,000 — 1 inch = 2,000 feet

FIGURE No.: 1

SITE VICINITY MAP

0 100 200 400 600 Feet

N

SINCE F&R 1881

FROEHLING & ROBERTSON, INC.
Engineering Stability Since 1881
310 Hubert Street
Raleigh, North Carolina 27603-2302 I USA
T 919.828.3441 I F 919.828.5751

Client:	NCDOT
Project:	R-2530B PSAs
Location:	Parcel #214, Albemarle
F&R Project No.:	66V-0092 8006 Hwy 73 West - Mt Gilead, North Carolina
Data:	ArcMap Imagery
Date:	November 2017 (Revised Feb. 5, 2018)

Disclaimer: F&R makes no warranties or guarantees regarding the accuracy or completeness of geographic features shown on this map. Spatial accuracy of measurement provided by source agencies can be obtained by contacting F&R.

Scale: 1:2,400 1 inch = 200 feet

FIGURE No.: 2

OUTLET PROTECTION
CLASS B RIP RAP
EST 5 TONS
EST 14 SY GFD

173

DUKE ENERGY PROGRESS, LLC
SWIFT ISLAND ACCESS AREA

NC GRID NAD 83'95

B-1: 2.0'-4.0'
GRO=<0.3 mg/kg
DRO=1.1 mg/kg
TOTAL BTEX=<0.3 mg/kg
TOTAL AROMATICS=0.6 mg/kg
16 EPA PAHs=<0.09 mg/kg
BaP=<0.012 mg/kg

B-2: 6.0'-8.0'
GRO=<0.28 mg/kg
DRO=<0.28 mg/kg
TOTAL BTEX=<0.28 mg/kg
TOTAL AROMATICS=<0.06 mg/kg
16 EPA PAHs=<0.09 mg/kg
BaP=<0.011 mg/kg

B-3: 2.0'-4.0'
GRO=<0.28 mg/kg
DRO=<0.28 mg/kg
TOTAL BTEX=<0.28 mg/kg
TOTAL AROMATICS=<0.06 mg/kg
16 EPA PAHs=<0.09 mg/kg
BaP=<0.011 mg/kg

B-4: 2.0'-4.0'
GRO=0.48 mg/kg
DRO=2.9 mg/kg
TOTAL BTEX=<0.28 mg/kg
TOTAL AROMATICS=1.4 mg/kg
16 EPA PAHs=0.15 mg/kg
BaP=<0.011 mg/kg

RETAIN 24"

ISBLK
BUS

214
LINDA GODWIN

NC 73

GRADE TO
DRAIN

215

R/W

EOI

EXIST R/W

WINDEMERE
CIRCLE

EXIST R/W

SCALE (FEET)
0 20' 40'
1"=40'

SINCE 1881
FROEHLING & ROBERTSON, INC.
Engineering Stability Since 1881
310 Hubert Street
Raleigh, North Carolina 27603-2302|USA
T 919.828.3441|F 919.828.5751
www.fandr.com

LEGEND

Approximate Geoprobe Boring Location

Sample data shown in bold exceeded the NCDEQ Action Level as outlined in the NCDEQ DWM UST Section Guidance

LABORATORY RESULTS & BORING LOCATION PLAN

CLIENT: NCDOT	
PROJECT: 2530B PSAs	
LOCATION: Mt. Gilead, NC Parcel #214, 8006 NC Highway 73 West	
F&R PROJECT No.: 66V-092	
DRAWN BY: T. T. Walker	CHECKED BY: B. Whitley, P.E.
DATE: February 2018	SCALE: 1"=40'

FIGURE No.: 3

APPENDIX II

GEOPHYSICAL REPORT PREPARED BY PYRAMID

PYRAMID GEOPHYSICAL SERVICES
(PROJECT 2017-203)

GEOPHYSICAL SURVEY

METALLIC UST INVESTIGATION:
PARCEL 214
NCDOT PROJECT R-2530B

8006 NC HIGHWAY 73 W., PEE DEE, NC

SEPTEMBER 8, 2017

Report prepared for: **Benjamin Whitley, P.E.**
Froehling and Robertson
310 Hubert Street
Raleigh, North Carolina 27603

Prepared by: _____
Eric C. Cross, P.G.
NC License #2181

Reviewed by: _____
Douglas A. Canavello, P.G.
NC License #1066

503 INDUSTRIAL AVENUE, GREENSBORO, NC 27406
P: 336.335.3174 F: 336.691.0648
C257: GEOLOGY C1251: ENGINEERING

GEOPHYSICAL INVESTIGATION REPORT
Parcel 214 – 8006 NC Highway 73 W.
Pee Dee, Montgomery County, North Carolina

Table of Contents

Executive Summary 1
Introduction 2
Field Methodology 2
Discussion of Results 3
Summary and Conclusions 5
Limitations 5

Figures

Figure 1 – Parcel 214 Geophysical Survey Boundaries and Site Photographs
Figure 2 – Parcel 214 EM61 Results Contour Map
Figure 3 – Parcel 214 GPR Transect Locations and Images
Figure 4 – Overlay of Geophysical Survey Boundaries on NCDOT Engineering Plans

LIST OF ACRONYMS

CADD .....Computer Assisted Drafting and Design
DF .....Dual Frequency
EM.....Electromagnetic
GPR.....Ground Penetrating Radar
GPS .....Global Positioning System
NCDOT.....North Carolina Department of Transportation
ROW .....Right-of-Way
UST .....Underground Storage Tank

EXECUTIVE SUMMARY

Project Description: Pyramid Environmental conducted a geophysical investigation for Froehling & Robertson, Inc. (F&R) at Parcel 214, located at 8006 NC Highway 73 W., Pee Dee, NC. The survey was part of a North Carolina Department of Transportation (NCDOT) Right-of-Way (ROW) investigation (NCDOT Project R-2530B). F&R directed Pyramid as to the geophysical survey boundaries at the project site, which were designed to extend from the existing edge of pavement to the proposed ROW lines and/or easement lines within the property, whichever distance was greater. Conducted from July 23-25, 2017, the geophysical investigation was performed to determine if unknown, metallic underground storage tanks (USTs) were present beneath the survey area.

Geophysical Results: The geophysical investigation consisted of electromagnetic (EM) induction-metal detection and ground penetrating radar (GPR) surveys. A total of three EM anomalies were identified. GPR was performed across all EM anomalies to investigate the subsurface for larger structures. GPR recorded evidence of minor reflections that may be associated with buried metallic debris or minor metal conduit.

Collectively, the geophysical data did not show any evidence of unknown metallic USTs at Parcel 214.

INTRODUCTION

Pyramid Environmental conducted a geophysical investigation for Froehling and Robertson, Inc. (F&R) at Parcel 214, located at 8006 NC Highway 73 W., Pee Dee, NC. The survey was part of a North Carolina Department of Transportation (NCDOT) Right-of-Way (ROW) investigation (NCDOT Project R-2530B). F&R directed Pyramid as to the geophysical survey boundaries at the project site, which were designed to extend from the existing edge of pavement to the proposed ROW lines and/or easement lines within the property, whichever distance was greater. Conducted from July 23-25, 2017, the geophysical investigation was performed to determine if unknown, metallic underground storage tanks (USTs) were present beneath the survey area.

The site included a commercial building surrounded by gravel parking spaces and grass areas. An aerial photograph showing the survey area boundaries and ground-level photographs are shown in **Figure 1**.

FIELD METHODOLOGY

The geophysical investigation consisted of electromagnetic (EM) induction-metal detection and ground penetrating radar (GPR) surveys. Pyramid collected the EM data using a Geonics EM61 metal detector integrated with a Trimble AG-114 GPS antenna. The integrated GPS system allows the location of the instrument to be recorded in real-time during data collection, resulting in an EM data set that is geo-referenced and can be overlain on aerial photographs and CADD drawings. A boundary grid was established around the perimeter of the site with marks every 10 feet to maintain orientation of the instrument throughout the survey and assure complete coverage of the area.

According to the instrument specifications, the EM61 can detect a metal drum down to a maximum depth of approximately 8 feet. Smaller objects (1-foot or less in size) can be detected to a maximum depth of 4 to 5 feet. The EM61 data were digitally collected at approximately 0.8-foot intervals along north-south trending or east-west trending,

generally parallel survey lines, spaced five feet apart. The data were downloaded to a computer and reviewed in the field and office using the Geonics NAV61 and Surfer for Windows Version 14.0 software programs.

GPR data were acquired across select EM anomalies on July 25, 2017, using a Geophysical Survey Systems, Inc. (GSSI) UtilityScan DF unit equipped with a dual frequency 300/800 MHz antenna. Data were collected both in reconnaissance fashion as well as along formal transect lines across EM features. The GPR data were viewed in real-time using a vertical scan of 512 samples, at a rate of 48 scans per second. GPR data were viewed down to a maximum depth of approximately 6 feet, based on dielectric constants calculated by the DF unit in the field during the reconnaissance scans. GPR transects across specific anomalies were saved to the hard drive of the DF unit for post-processing and figure generation.

Pyramid's classifications of USTs for the purposes of this report are based directly on the geophysical UST ratings provided by the NCDOT. These ratings are as follows:

Geophysical Surveys for Underground Storage Tanks
on NCDOT Projects

High Confidence	Intermediate Confidence	Low Confidence	No Confidence
Known UST Active tank - spatial location, orientation, and approximate depth determined by geophysics.	**Probable UST** Sufficient geophysical data from both magnetic and radar surveys that is characteristic of a tank. Interpretation may be supported by physical evidence such as fill/vent pipe, metal cover plate, asphalt/concrete patch, etc.	**Possible UST** Sufficient geophysical data from either magnetic or radar surveys that is characteristic of a tank. Additional data is not sufficient enough to confirm or deny the presence of a UST.	Anomaly noted but not characteristic of a UST. Should be noted in the text and may be called out in the figures at the geophysicist's discretion.

DISCUSSION OF RESULTS

Discussion of EM Results

A contour plot of the EM61 results obtained across the survey area at the property is presented in **Figure 2**. Each EM anomaly is numbered for reference in the figure. The

following table presents the list of EM anomalies and the cause of the metallic response, if known:

LIST OF METALLIC ANOMALIES IDENTIFIED BY EM SURVEY

Metallic Anomaly #	Cause of Anomaly	Investigated with GPR
1	Building	
2	Possible debris/metal	☑
3	Vent pipe/gutter	☑

EM Anomaly 1 was suspected to be the result of interference from the building. Anomaly 2 was associated with unknown buried metal. Anomaly 3 was suspected to be associated with a gutter and/or a former vent pipe. All areas were investigated further by GPR.

Discussion of GPR Results

Figure 3 presents the locations of the formal GPR transects performed at the property, as well as the transect images. A total of three formal GPR transects were performed at the site. Transects 1-2 were performed across Anomaly 2 near an apparent former pump island. These transects recorded minor reflectors that were suggestive of possible buried debris or former utilities. Transect 3 was performed parallel to the building across Anomalies 1 and 3, and also recorded minor reflectors that may be associated with debris or buried conduit.

Collectively, the geophysical data did not record any evidence of unknown metallic USTs at Parcel 214.

Figure 4 provides an overlay of the geophysical survey area onto the NCDOT MicroStation engineering plans (proposed ROW and easements) for reference.

SUMMARY & CONCLUSIONS

Pyramid's evaluation of the EM61 and GPR data collected at Parcel 214 in Pee Dee, North Carolina, provides the following summary and conclusions:

- The EM61 and GPR surveys provided reliable results for the detection of metallic USTs within the accessible portions of the geophysical survey area.
- GPR was performed across all EM anomalies to investigate the subsurface for larger structures.
- GPR recorded evidence of minor reflections that may be associated with buried metallic debris or minor metal conduit.
- Collectively, the geophysical data did not show any evidence of unknown metallic USTs at Parcel 214.

LIMITATIONS

Geophysical surveys have been performed and this report was prepared for F&R in accordance with generally accepted guidelines for EM61 and GPR surveys. It is generally recognized that the results of the EM61 and GPR surveys are non-unique and may not represent actual subsurface conditions. The EM61 and GPR results obtained for this project have not conclusively determined the definitive presence or absence of metallic USTs, but the evidence collected is sufficient to result in the conclusions made in this report. Additionally, it should be understood that areas containing extensive vegetation, reinforced concrete, or other restrictions to the accessibility of the geophysical instruments could not be fully investigated.

N

APPROXIMATE BOUNDARIES OF GEOPHYSICAL SURVEY AREA

View of Survey Area
(Facing Approximately Northeast)

View of Survey Area
(Facing Approximately North)

TITLE

PARCEL 214 - GEOPHYSICAL SURVEY
BOUNDARIES AND SITE PHOTOGRAPHS

PROJECT

PARCEL 214
ALBEMARLE, NORTH CAROLINA
NCDOT PROJECT R-2530B

PYRAMID GEOPHYSICS
503 INDUSTRIAL AVENUE
GREENSBORO, NC 27460
(336) 335-3174 (p) (336) 691-0648 (f)
License # C1251 Eng. / License # C257 Geology

DATE	8/24/2017	CLIENT	FROEHLING & ROBERTSON
PYRAMID PROJECT #:	2017-203		**FIGURE 1**

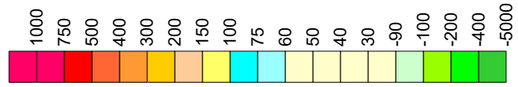
N

EM61 METAL DETECTION RESULTS

NO EVIDENCE OF UNKNOWN METALLIC USTs OBSERVED.

The contour plot shows the differential results of the EM61 instrument in millivolts (mV). The differential results focus on larger metallic objects such as USTs and drums. The EM61 data were collected on July 23, 2017, using a Geonics EM61 instrument. Verification GPR data were collected on July 25, 2017, using a GSSI UtilityScan DF unit with a dual frequency 300/800 MHz antenna.

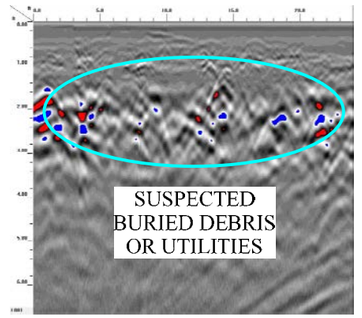
EM61 Metal Detection Response (millivolts)



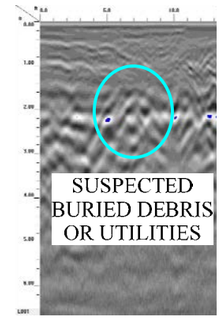
TITLE	PARCEL 214 - EM61 RESULTS CONTOUR MAP
PROJECT	PARCEL 214 ALBEMARLE, NORTH CAROLINA NCDOT PROJECT R-2530B
PYRAMID GEOPHYSICS	503 INDUSTRIAL AVENUE GREENSBORO, NC 27460 (336) 335-3174 (p) (336) 691-0648 (f) License # C1251 Eng. / License # C257 Geology
DATE 8/24/2017	CLIENT FROEHLING & ROBERTSON
PYRAMID PROJECT #: 2017-203	**FIGURE 2**

N

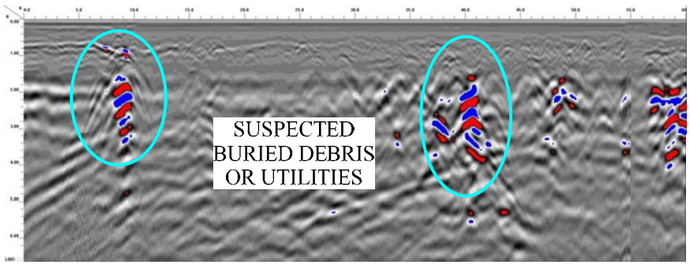
GPR TRANSECT LOCATIONS



GPR TRANSECT 1 (T1)

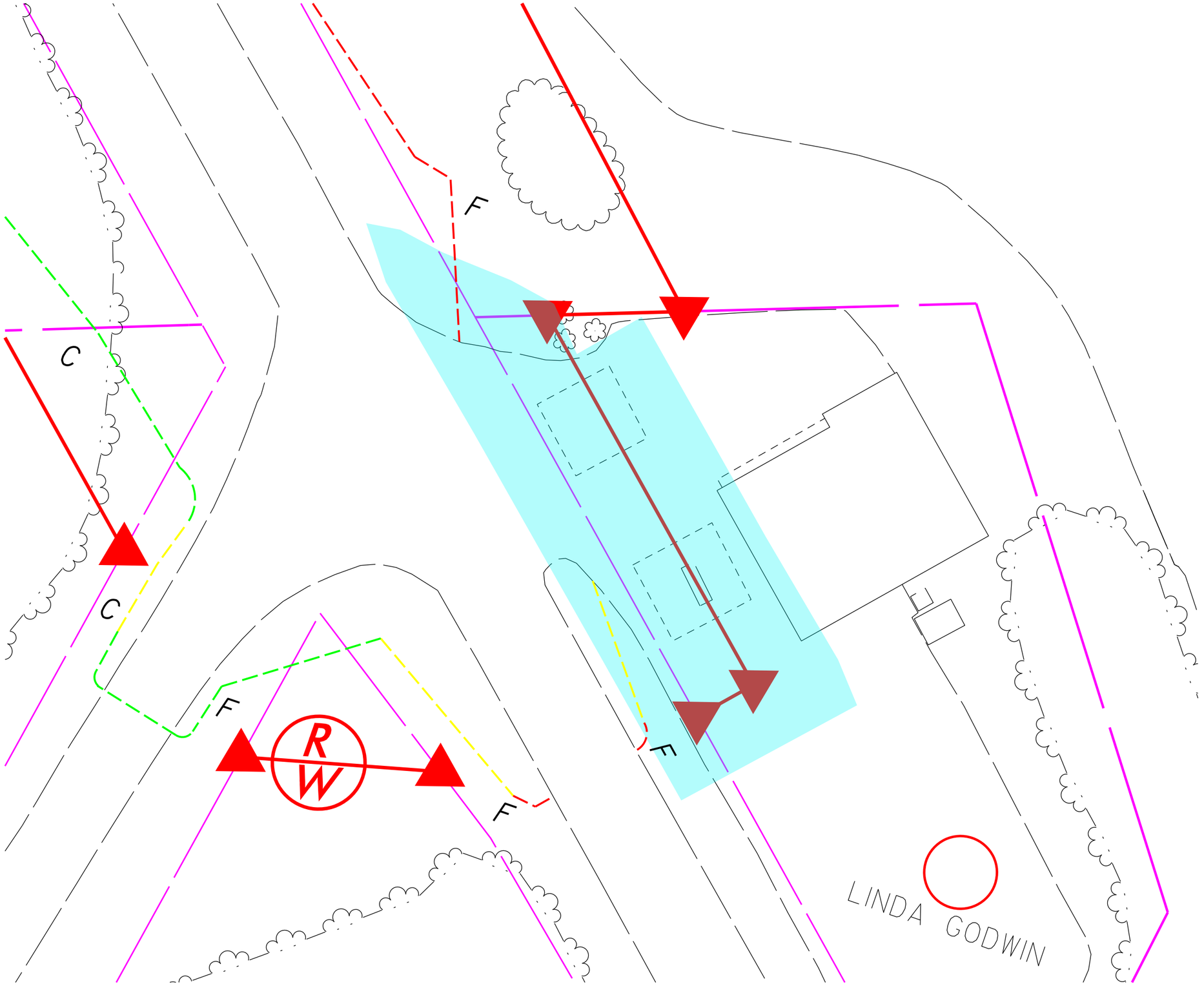


GPR TRANSECT 2 (T2)



GPR TRANSECT 3 (T3)

TITLE	PARCEL 214 - GPR TRANSECT LOCATIONS AND IMAGES
PROJECT	PARCEL 214 ALBEMARLE, NORTH CAROLINA NCDOT PROJECT R-2530B
PYRAMID GEOPHYSICS	503 INDUSTRIAL AVENUE GREENSBORO, NC 27460 (336) 335-3174 (p) (336) 691-0648 (f) License # C1251 Eng. / License # C257 Geology
DATE: 8/24/2017	CLIENT: FROEHLING & ROBERTSON
PYRAMID PROJECT #: 2017-203	**FIGURE 3**



LEGEND

- EXISTING ROW
- EXISTING PROPERTY BOUNDARY
- PROPOSED ROW LINE
- E — TEMPORARY CONSTRUCTION EASEMENT
- PDE — PROPOSED PERMANENT DRAINAGE
- PUE — PROPOSED PERMANENT UTILITY
- PROPOSED SS CUT LINE
- PROPOSED SS FILL LINE
- GEOPHYSICAL SURVEY AREA

0 15 30
FEET

N

TITLE
OVERLAY OF GEOPHYSICAL SURVEY BOUNDARIES ON NCDOT ENGINEERING PLANS

PROJECT
PARCEL 214
ALBEMARLE, NORTH CAROLINA
NCDOT PROJECT R-2530B

PYRAMID GEOPHYSICS
503 INDUSTRIAL AVENUE
GREENSBORO, NC 27406
336.335.3174 (p) 336.691.0648 (f)
License # C1251 Eng. / #C257 Geology

DATE: 8-24-17	REVISION NO. 0
PYRAMID PROJECT NO. 2017-203	FIGURE NO. 4

APPENDIX III

SITE PHOTOS

Photo #1: Boring locations B-1 and B-2 located just west of the on-site building, facing east.

Photo #2: Boring location B-3, B-4, and a former fuel dispenser island located just west of the on-site building, facing east.

APPENDIX IV

GEOPROBE LOGS

FROEHLING & ROBERTSON, INC.

GEOPROBE LOG

Boring: P214 B-1 (2-4) (1 of 1)

Project No: 66V-0092
Client: NCDOT
Project: R2530B PSAs
City/State: ALBEMARLE, NC

Elevation: EXISTING
Total Depth: 7.0'
Boring Location: SEE BORING LOCATION PLAN

Drilling Method: DIRECT PUSH
Hammer Type: Automatic
Date Drilled: 8/30/17
Driller: REGIONAL PROBING

Elevation	Depth	Description of Materials (Classification)	*Sample Depth (feet)	PID (ppm)	Remarks
		Moist, Brown, Silty Sandy Clay (SM/CL)			
	2.0	Moist, Orange Brown Red, Silty Sandy Clay (SM/CL)	2.0	3.5	One sample collected for laboratory analysis (2.0-4.0)
	4.0	Dry, Brown, Silty Fine toMedium Sand (SM)	4.0	5.5	No petroleum odors observed.
	6.0		6.0	2.2	
	7.0	Geoprobe Boring Terminated by Direct Push Refusal at 7 feet.	7.0	5.0	

GEOPROBE_LOG BORING LOGS.GPJ F&R.GDT 10/9/17

FROEHLING & ROBERTSON, INC.

GEOPROBE LOG

Boring: P214 B-2 (6-8) (1 of 1)

Project No: 66V-0092
Client: NCDOT
Project: R2530B PSAs
City/State: ALBEMARLE, NC

Elevation: EXISTING
Total Depth: 9.5'
Boring Location: SEE BORING LOCATION PLAN

Drilling Method: DIRECT PUSH
Hammer Type: Automatic
Date Drilled: 8/30/17
Driller: REGIONAL PROBING

Elevation	Depth	Description of Materials (Classification)	*Sample Depth (feet)	PID (ppm)	Remarks
		Moist, Orange Brown, Silty Sandy Clay with Gravel (Quartz) (SM/GM)			
	2.0	Dry, Orange Brown, Silty Sandy Clay with Gravel (Quartz) (SM/GM)	2.0	5.6	
	4.0		4.0	6.5	
	6.0	Moist, Red Orange, Silty Sandy Clay (SM/CL)	6.0	7.0	One sample collected for laboratory analysis (6.0-8.0) No petroleum odors observed.
	8.0	Dry, Red, Silty Fine to Medium Sand (SM)	8.0	7.3	
	9.5	Geoprobe Boring Terminated by Direct Push Refusal at 9.5 feet.	9.5	6.0	

GEOPROBE_LOG BORING LOGS.GPJ F&R.GDT 10/9/17

FROEHLING & ROBERTSON, INC.

GEOPROBE LOG

Boring: P214 B-3 (2-4) (1 of 1)

Project No: 66V-0092
Client: NCDOT
Project: R2530B PSAs
City/State: ALBEMARLE, NC

Elevation: EXISTING
Total Depth: 6.0'
Boring Location: SEE BORING LOCATION PLAN

Drilling Method: DIRECT PUSH
Hammer Type: Automatic
Date Drilled: 8/30/17
Driller: REGIONAL PROBING

Elevation	Depth	Description of Materials (Classification)	*Sample Depth (feet)	PID (ppm)	Remarks
		Moist, Orange Red Brown, Silty Sandy Clay (SM/CL)			
	2.0	Moist, Orange Red Brown, Silty Sandy Clay with Gravel (Quartz) (SM/GM)	2.0	4.4	One sample collected for labratory analysis (2.0-4.0)
					No petroleum odors observed.
	4.0		4.0	5.0	
	6.0	Geoprobe Boring Terminated by Direct Push Refusal at 6 feet.	6.0	4.8	

GEOPROBE_LOG BORING LOGS.GPJ F&R.GDT 10/9/17

FROEHLING & ROBERTSON, INC.

GEOPROBE LOG

Boring: P214 B-4 (2-4) (1 of 1)

Project No: 66V-0092
Client: NCDOT
Project: R2530B PSAs
City/State: ALBEMARLE, NC

Elevation: EXISTING
Total Depth: 10.0'
Boring Location: SEE BORING LOCATION PLAN

Drilling Method: DIRECT PUSH
Hammer Type: Automatic
Date Drilled: 8/30/17
Driller: REGIONAL PROBING

Elevation	Depth	Description of Materials (Classification)	*Sample Depth (feet)	PID (ppm)	Remarks
		Moist, Red Brown, Silty Sandy Clay (SM/CL)			
	2.0	Moist, Red Brown, Silty Sandy Clay with Gravel (Quartz) (GM/SM)	2.0	5.5	One sample collected for laboratory analysis (2.0-4.0) No petroleum odors observed.
	4.0		4.0	6.8	
	6.0		6.0	6.5	
	8.0		8.0	6.7	
	10.0	Geoprobe Boring Terminated at 10 feet.	10.0	5.0	

GEOPROBE_LOG BORING LOGS.GPJ F&R.GDT 10/9/17

APPENDIX V

LABORATORY ANALYTICAL RESULTS

QED

REDLAB RAPID ENVIRONMENTAL DIAGNOSTICS

QROS

Hydrocarbon Analysis Results

Client: F&R
Address: 310 HUBERT ST.
RALEIGH, NC

Contact: BEN WHITLEY

Project: NCDOT-R2530B-P214

Samples taken Wednesday, August 30, 2017
Samples extracted Wednesday, August 30, 2017
Samples analysed Friday, September 1, 2017

Operator PANTESCO

U04049

Matrix	Sample ID	Dilution used	BTEX (C6 - C9)	GRO (C5 - C10)	DRO (C10 - C35)	TPH (C5 - C35)	Total Aromatics (C10-C35)	16 EPA PAHs	BaP	% Ratios			HC Fingerprint Match
										C5 - C10	C10 - C18	C18	
s	P214-B1 (2-4)	11.9	<0.3	<0.3	1.1	1.1	0.6	<0.09	<0.012	0	80	20	Deg.PHC 76.3%,(FCM)
s	P214-B2 (6-8)	11.4	<0.28	<0.28	<0.28	<0.28	<0.06	<0.09	<0.011	0	0	0	,(FCM),(BO)
s	P214-B3 (2-4)	11.2	<0.28	<0.28	<0.28	<0.28	<0.06	<0.09	<0.011	0	0	100	,(FCM)
s	P214-B4 (2-4)	11.4	<0.28	0.48	2.9	3.4	1.4	0.15	<0.011	29.8	56.6	13.6	Road Tar 76.6%,(FCM)

Initial Calibrator QC check OK

Final FCM QC Check OK 97.8 %

Concentration values in mg/kg for soil samples and mg/L for water samples. Soil values uncorrected for moisture or stone content. Fingerprints provide a tentative hydrocarbon identification.

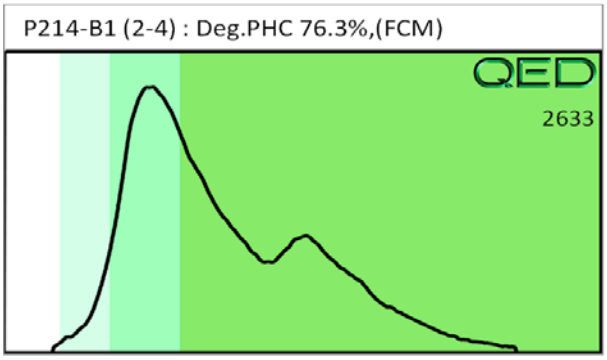
Abbreviations :- FCM = Results calculated using Fundamental Calibration Mode : % = confidence of hydrocarbon identification : (PFM) = Poor Fingerprint Match : (T) = Turbid : (P) = Particulate detected

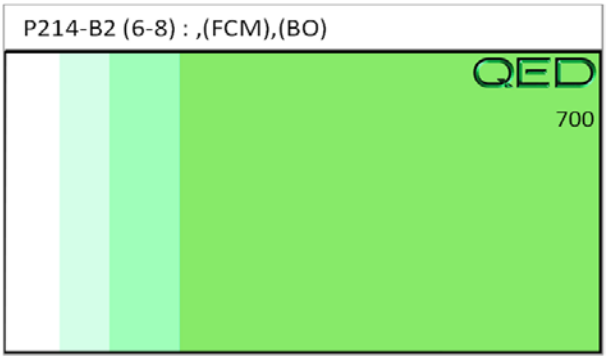
B = Blank Drift : (SBS)/(LBS) = Site Specific or Library Background Subtraction applied to result : (BO) = Background Organics detected : (OCR) = Outside cal range : (M) = Modifed Result.

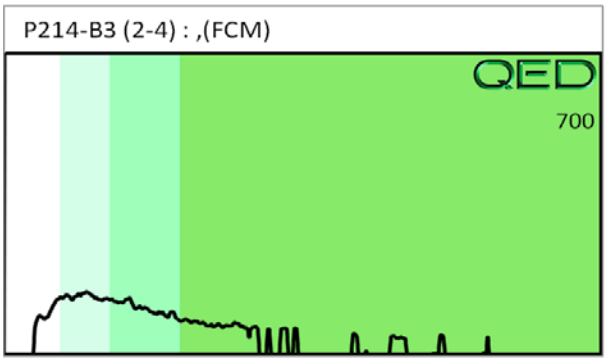
% Ratios estimated aromatic carbon number proportions : HC = Hydrocarbon : PHC = Petroleum HC : FP = Fingerprint only. **Data generated by HC-1 Analyser**

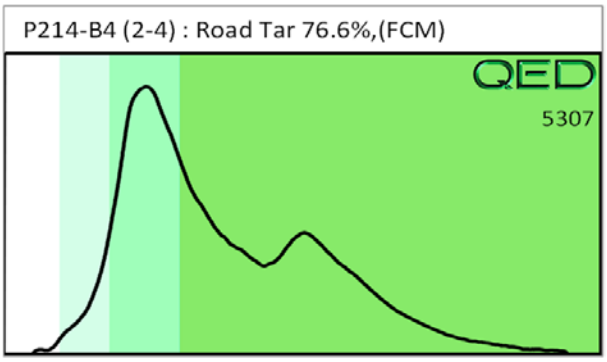
QED Hydrocarbon Fingerprints

Project: NCDOT-R2530B-P214 Friday, September 1, 2017









Corporate HQ: 3015 DUMBARTON ROAD RICHMOND, VIRGINIA 23228 T 804.264.2701 F 804.264.1202 www.fandr.com

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